NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA

SURATHKAL, MANGALORE - 575 025

Course Code – CS111

Course Name – Computer Programming Lab

Lab - 05

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Functions

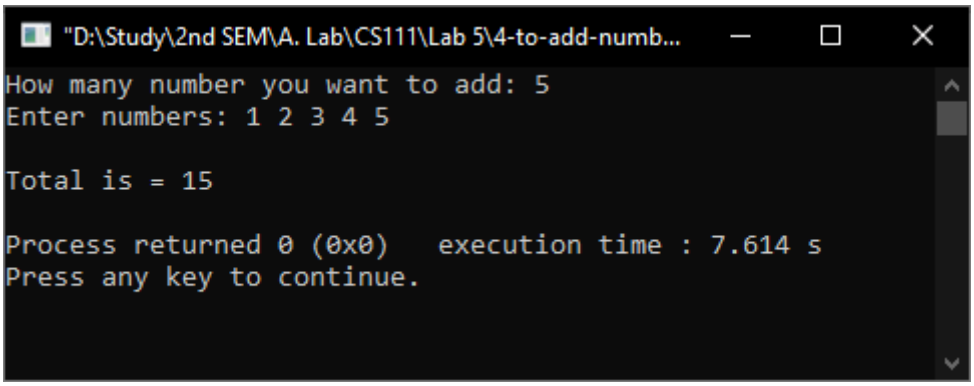
Question - 4
To add numbers using function

Answer

```c
#include<stdio.h>
int add_numbers(int *nums, int len);
int main()
{
    int n, res, i;
    printf("How many number you want to add: ");
    scanf("%d", &n);
    int numbers[n];
    printf("Enter numbers: ");
    for(i=0; i<n; i++)
    {
        scanf("%d",(numbers+i));  //taking input
    }
    res = add_numbers(numbers, n);
    printf("\nTotal is = %d\n",res);
    return 0;
}

int add_numbers(int *nums, int len)  //function
{
    int i, sum = 0;
    for(i=0; i<len; i++)
    {
        sum += *(nums+i);
    }
    return sum;
}
```

Output



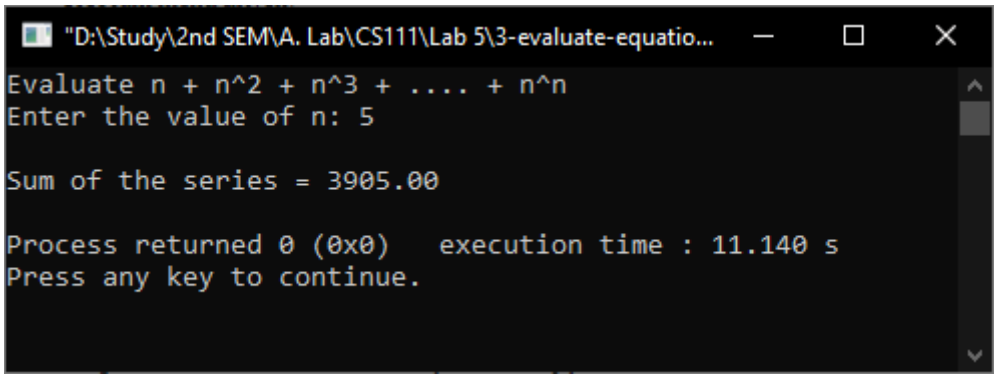
Question – 3

Program to evaluate the equation $y = x^1 + x^2 + x^3 + \ldots + x^n$

Answer

```c
#include <stdio.h>
#include <math.h>
double sum_of_series(int n);
int main()
{
    int n;
    double res;
    printf("Evaluate n + n^2 + n^3 + .... + n^n\n");
    printf("Enter the value of n: ");
    scanf("%d", &n);
    res = sum_of_series(n);
    printf("\nSum of the series = %.2lf\n", res);
    return 0;
}
double sum_of_series(int n)   //function
{
    double sum, p;
    p = pow(n,n);
    sum = (n * (p - 1)) / (float) (n-1);
    return sum;
}
```

Output

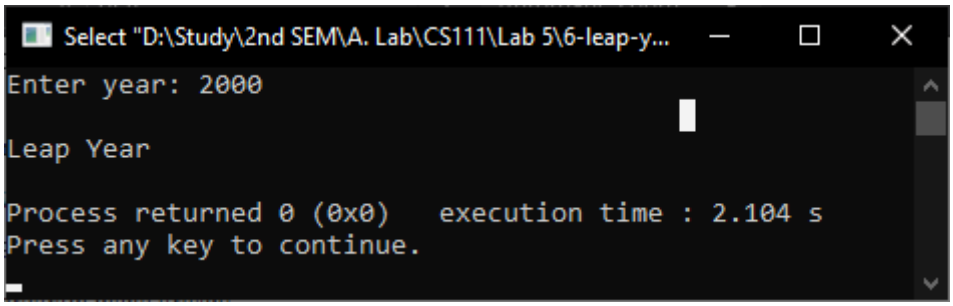


Question – 6
Program to find whether an entered year is leap year or not

Answer

```c
#include <stdio.h>
void check_year(int year);
int main()
{
    int year;
    printf("Enter year: ");
    scanf("%d", &year);
    check_year(year);
    return 0;
}
void check_year(int year)  // function
{
    if ((year % 400 == 0) || (year % 4 == 0 && year % 100 != 0))
    {
        printf("\nLeap Year\n");
    }
    else
    {
        printf("\nNot Leap year\n");
    }
}
```

Output



Recursion

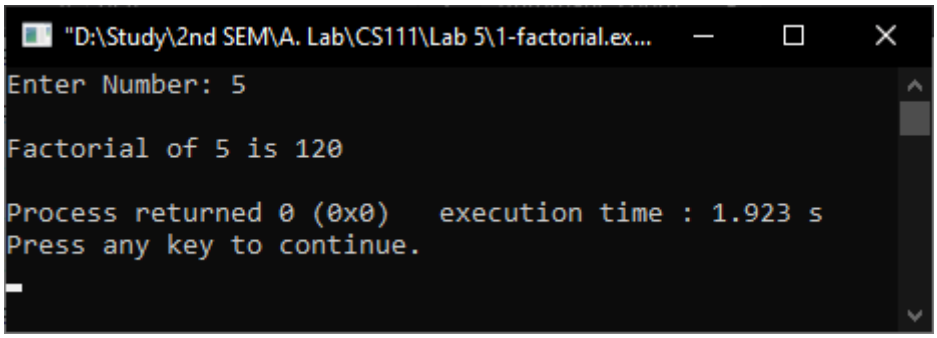
Question – 1

To find the factorial of a number

Answer

```c
#include<stdio.h>
int fact(int n);
int main()
{
    int n, res;
    printf("Enter Number: ");
    scanf("%d", &n);
    res = fact(n);
    printf("\nFactorial of %d is %d\n",n,res);
    return 0;
}
int fact(int n)   // recursion function
{
    if(n==1)
        return 1;
    else
        return n * fact(n-1);
}
```

Output



Question – 2
To generate Fibonacci Series upto a given number

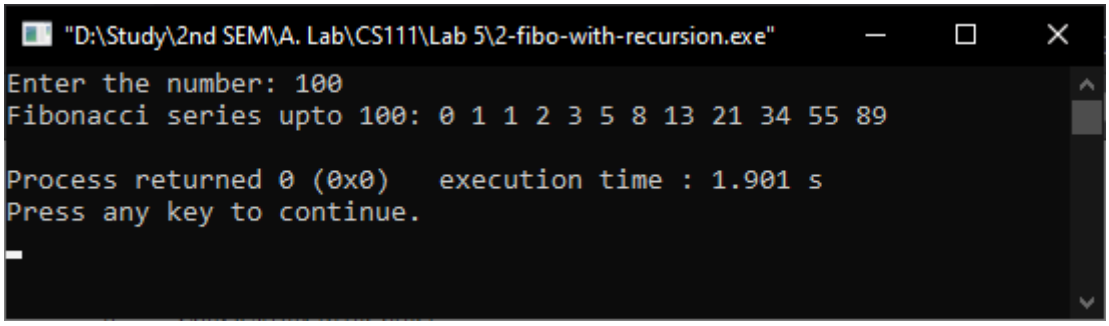
Answer

```c
#include <stdio.h>
int fibonacci(int n, int n1, int n2);
int main()
{
    int n, n1=0, n2=1;
    printf("Enter the number: ");
    scanf("%d", &n);
    printf("Fibonacci series upto %d: ", n);
    printf("%d %d ", n1, n2);
    fibonacci(n, n1, n2);
    printf("\n");
    return 0;
}

int fibonacci(int n, int n1, int n2)  // function
{
    int temp = n1 + n2;
    if(temp>=n)
    {
        return 0;
    }
```

```
    else
    {
        printf("%d ",temp);
        n1 = n2;
        n2 = temp;
        fibonacci(n, n1, n2);
    }
}
```

Output



Question – 4

To find the sum of series 1 + 1/3! + 1/5! + …. + 1/N!

Answer

```
#include <stdio.h>
double sum(int n, int n1, double s);
int main()
{
    int n;
    double res;
    printf("Enter N: ");
    scanf("%d", &n);
    res = sum(n, 1, 0);
    printf("%lf\n", res);
    return 0;
}
```

```
double sum(int n, int n1, double s)
{
    int fact = 1, i;
    for (i = 1; i <= n1; i++)
    {
        fact *= i;
    }
    if (n1 > n)
    {
        return s;
    }
    else
    {
        s = s + (1.0 / fact);
        sum(n, n1 + 2, s);
    }
}
```

Output